



# QuakeWrap® U27C

## Product Description

QuakeWrap® U27C is a high-strength, high modulus unidirectional carbon fabric. The fabric is black in color and is impregnated in the field using QuakeBond™ 300SR Saturating Resin to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural elements. The fabric weighs 27.8 oz/yd<sup>2</sup> (943 g/m<sup>2</sup>) and the fibers are primarily in the longitudinal (0°) direction.

## Uses

- Strengthening of the structural elements in buildings, bridges, and other structures due to increased loads.
- Seismic retrofit of structural elements such as columns, unreinforced masonry walls, shear walls, and diaphragms
- Repair of large diameter pipes and culverts to achieve strengthening and water-resistance
- Repair of damaged structural components caused by aggressive environments, fire, vehicle impact, aging, etc.
- Changes in structural system: new openings in floors, removal of existing walls, etc.
- Correction of design or construction errors

## Advantages

- High-strength and lightweight fabric ideal for confined spaces
- Used for flexure and shear strengthening as well as confinement
- Fully compatible and excellent adhesion to QuakeBond™ resins
- Non-corrosive
- Can be formed to strengthen and repair complex shapes
- Light weight does not alter dead load of structure
- Alkali resistant
- Special manufacturing of the fabric reduces potential of fraying

## Coverage

45 ft<sup>2</sup> per 1-gallon (1.22 m<sup>2</sup> per liter) QuakeBond™ 300SR

## Surface Preparation

Surface must be clean and sound; it can be dry or damp but must be free of standing water and frost. Remove dust, laitance, grease, curing compounds, disintegrated materials, and other bond inhibiting materials from the surface. Existing uneven surfaces must be filled with an appropriate repair mortar.

The adhesive strength of the substrate must be verified after surface preparation by random pull-off testing (ACI 503R) at the discretion of the engineer. Minimum tensile strength of 200 psi (1.4 MPa) with substrate failure is required for bond-critical applications.

Blast clean, shot-blast, scarify or use other approved mechanical means to clean the substrate surface. Any sharp edges (i.e. fins, form-marks, etc.) must be ground smooth and flush. Sharp edges must be rounded to a minimum radius of 3/4 in. (19 mm).

Apply QuakeBond™ 220UR onto the substrate with a trowel or spatula to a nominal thickness of 40 mil (1mm). A notched trowel may be used for this application.



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## Fiber & Laminate Properties

	US UNITS	SI UNITS
<b>Fiber Properties:</b>		
Tensile Strength	550 ksi	3.8 GPa
Tensile Modulus	33,500 ksi	231 GPa
Ultimate Elongation	1.64%	1.64%
Density	0.065 lb/in <sup>3</sup>	1.8 g/cm <sup>3</sup>
Aerial Weight	27.8 oz/yd <sup>2</sup>	943 g/m <sup>2</sup>
<b>Laminate with 300SR: *</b>		
Tensile Strength	179.0 ksi	1234 MPa
Tensile Modulus	14,000 ksi	96,500 MPa
Ultimate Elongation	0.92%	0.92%
Breaking Force	8,400 lb/in	1470 N/mm
Ply Thickness	0.047 in	1.19 mm

\* Results based on tests of single plies of fabrics saturated with 300SR

## Application

- Saturate QuakeWrap® U20C fabric thoroughly with QuakeBond™ 300SR; for more details, refer to the Product Data Sheet for 300SR.
- Prior to mixing and applying QuakeBond™ 300SR, all products should be preconditioned to a temperature of 65-85°F (18-29°C).
- Before the epoxies harden, apply saturated fabric to the substrate surface that has been coated with QuakeBond™ 220UR.
- Using gloved hands or a putty knife, carefully remove any entrapped air bubbles under the fabric; a plastic laminating roller can be used for this purpose. If required, additional layers of saturated fabric can be directly applied on top of previous layers.
- Feather the edges of the fabric with QuakeBond™ 220UR.

Installation of QuakeWrap® fabrics may only be performed by specially trained and approved contractors.

Fabric can be cut to appropriate length using a commercial quality heavy duty scissor. Dull or worn cutting tools can damage, weaken or fray the fiber; their use should be avoided.

## Cleanup

Dispose of waste in accordance with local disposal regulations. Cured materials can only be removed mechanically. See QuakeBond™ 300SR and 220UR SDSs for more information on resin cleanup.

## Packaging

- Rolls: 24 in x 75 yards (610 mm x 68 m).
- This fabric can be easily cut in the field.



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## Shelf life and Storage

Shelf life is unlimited in proper storage conditions. Store in a dry environment at 45°-95°F (7°-35°C).

## Limitations

Design calculations must be made and certified by an independent licensed professional engineer. System is a vapor barrier. Concrete should not be encapsulated in areas of freeze/thaw.

## Caution

QuakeWrap® U20C is non-reactive. Caution must be used when handling since a fine carbon dust may be present on the surface. Gloves must be worn to protect against skin irritation. Caution must also be used when cutting the fabric to protect against airborne carbon dust generated by the cutting procedure. Use of an appropriate, properly fitting NIOSH approved respirator is recommended.

## First Aid

Appropriate Personal Protective Equipment (PPE) should be worn at all times when handling product. Consult SDS for more information.

## Certificate of Compliance

Certificate of compliance are available upon request and included with each shipment.

## Warranties and Disclaimers

Hychem warrants that this product shall conform to the technical specifications published in the product literature. The quality and fitness of the product is dependent upon the proper use and application of the product by the applicator. Hychem has no role in the application of the finished polymer other than to manufacture and supply its components. It is vital that the person applying this product understands the product and is fully trained and certified in the use of spray equipment and application of sol-gel materials. There are no warranties that extend beyond the description on the face of this instrument, except when provided in writing, directly by Hychem and executed under seal by a company officer.

## Field Support

Field support where provided, does not constitute supervisory responsibility. Suggestions made by HYCHEM either verbally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they and not HYCHEM are responsible for carrying out procedures appropriate to a specific application.

## Customer Responsibility

The technical information and application advice given in this publication is based on the best information available at the time of print. As the information herein is of a general nature, no assumption can be made as to the product suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by Commonwealth or State Legislation. The owner, his representative or the contractor is responsible for checking the suitability of products for their intended use.